Department of Toxic Substances Control

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(A) GROUNDWATER REMEDIAL INVESTIGATION/FEASIBILITY STUDY, ALAMEDA POINT SITE 25/ALAMEDA ANNEX IR-02, ALAMEDA, CALIFORNIA
(B) SOIL FEASIBILITY STUDY REPORT, OPERABLE UNIT 5, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Mr. Macchiarella:

The Department of Toxic Substances Control (DTSC) has received your letter dated June 7, 2005 responding to DTSC's comments on (a) the Groundwater Remedial Investigation/Feasibility Study (RI/FS) for Alameda Point Site 25 and the Fleet and Industrial Supply Center Oakland, Alameda Facility/Alameda Annex (FISCA) Installation Restoration Site (IR) 02, and (b) the Soil Feasibility Study Report, Alameda Point Operable Unit 5. This letter reiterates the unresolved issues on the Groundwater RI/FS and Soil FS Report, documents DTSC's decisions, and requires resolution of deficiencies at subsequent stages of the cleanup process.

## A. GROUNDWATER RI/FS, ALAMEDA POINT SITE 25/FISCA IR-02

DTSC provided comments on the draft Groundwater RI/FS on February 24, 2004; and the Navy responded to those comments on June 17, 2004. The Navy prepared the draft final Groundwater RI/FS in September 2004; and DTSC commented on the draft final document on October 13, 2004 and February 9, 2005. Since the contaminated groundwater plume straddles over the Alameda Point and FISCA, the Navy has elected to administer the cleanup program under the Alameda Point's Federal Facilities Agreement (FFA). In the absence of a dispute from the U.S. Environmental Protection Agency (EPA), the Navy finalized the Groundwater RI/FS on October 18, 2004 pursuant to the FFA conditions, however, without responding to DTSC's comments.

The Navy's June 7, 2005 letter generalizes and responds to DTSC's concerns provided in October 13, 2004 and February 9, 2005 comment letters. Unfortunately, the Navy's responses remain unsatisfactory; therefore, DTSC is not able to approve the Groundwater RI/FS and the associated human health risk assessment. In the interest of moving the project forward, DTSC is not requiring the Navy to revise the Groundwater RI/FS and risk assessment. Nonetheless, DTSC requires the Navy to address the following unresolved issues in the timeframes specified:

1. The Extent of Groundwater Contamination: DTSC has commented that the extent of benzene and naphthalene contamination has not been adequately characterized. The Navy recognizes this deficiency and has agreed to conduct additional investigation during the initial phase of the remedial design to fill data gap. To ensure the groundwater plume is adequately characterized, the Navy must obtain DTSC's concurrence on a supplemental investigation workplan before sampling.

2. Indoor Air Human Health Risk Assessment: The Navy states that there is sufficient evidence to show that the indoor air risk assessment based on soil gas is reliable. The Navy compares the indoor air risk (1E-06) derived from the FISCA soil gas and the indoor air risk (2E-06) based on the Alameda Point Site 30 groundwater, and suggests that indoor air risk from the soil gas source term is reliable. DTSC disagrees with such comparison because the study areas are different.

   The Navy further cites the Coast Guard's risk assessment as having close correlation of risks that were calculated based on the soil gas and groundwater source terms. Please note that DTSC has not been afforded the opportunity to review the Coast Guard's risk assessment and is not able to confirm whether such risk assessment is valid.

   For the Navy sites in Alameda where groundwater is shallow, DTSC continues to require all future risk assessments be using groundwater as the source tem for vapor intrusion modeling (see DTSC's February 9, 2005 letter).

3. Soil Gas Detections: DTSC has requested elevated benzene soil gas concentrations at locations SG-T2-4', OU5-SF-20D, ERM-HP-5, and other soil gas data collected by ERM be considered in the Groundwater RI/FS. The Navy has agreed to collect additional sampling during the remedial phase for refinement of the groundwater plume. The Navy believes that elevated soil gas concentrations would be reduced as groundwater remediation progresses.

As indicated in DTSC's October 13, 2004 letter, the Navy should install at least five soil gas monitoring probes surrounding each of the three soil vapor extraction zone radius of influence to monitor for any fugitive vapor emissions at the fringe of biosparge zones. These 15 soil gas monitoring probes at locations just outside of Biosparge Zones 1, 2, and 3 are different from the 13 soil gas probes, as proposed in the Groundwater RI/FS page 9-18, at the interior biosparge zones. At a minimum, the remedial design should propose a total of 28 soil gas monitoring probes for the treatment system.

4. Details of Biosparging Treatment System: The Navy suggests that the details requested by DTSC would typically be addressed during the remedial design. DTSC believes otherwise. DTSC has requested the footprint of the Biosparge Zone 2 be enlarged to cover locations OU5-SG-20D and SG-T2-4'. These locations contain two maximum benzene soil gas detections among FISCA and the Alameda Point. Failure to evaluate and provide remedial alternatives at contaminated locations (i.e., OU5-SG-20D and SG-T2-4') is a fatal flaw for a feasibility study. In the draft Proposed Plan, the Navy must include locations OU5-SG-20D and SG-T2-4' with Biosparge Zone 2.

The Groundwater RI/FS states that the performance criteria for biosparging include: (1) continued declining contaminant concentrations in on-site monitoring wells, meeting cleanup goals within the predicted cleanup timeframe, (2) receding contaminant plumes, and (3) documented degradation of contamination left after biosparging to below cleanup goals. The performance criteria are qualitative and the achievement points would be argumentative. DTSC determines these performance criteria impracticable. In the Record of Decision, the Navy must specify benzene and naphthalene target concentrations for groundwater and saturated soil on which biosparging could be terminated and monitored natural attenuation could be commenced.

The Groundwater RI/FS approximates that two years of biosparging, with nutrient enhancement, would achieve the above stated qualitative performance criteria. Six years of monitored natural attenuation would then be followed to achieve the proposed cleanup goals (i.e., benzene at 1 µg/L and naphthalene at 100 µg/L). The Groundwater RI/FS assumes two years of biosparging and six years of monitored natural attenuation as treatment durations for cost estimation purpose. These arbitrary treatment durations were chosen without supportive calculations.

Judging the past ten years of monitoring data, DTSC doubts that six years of monitored natural attenuation would achieve the cleanup goals. Benzene

concentrations have not been attenuated in the past ten years at several well locations (i.e., S-12, EW-2, MW25-05, etc.). The three biosparge zones (i.e., 2, 1, and 1 acres respectively for Biosparge Zones 1, 2, and 3) are within a larger groundwater contamination footprint of about 85 acres as depicted by the 1 µg/L benzene isoconcentration line. Locations distance from the biosparge zone would not receive the needed oxygen to promote biodegradation. Reaching the cleanup goals at locations outside of the biosparge zones in six years is unlikely.

Since the treatment durations were selected only for cost estimation purpose, biosparging and monitored natural attenuation should not be stopped simply when the two years of biosparging and/or six years of attenuation have been reached. In the Record of Decision, DTSC will require the Navy to establish target groundwater and saturated soil concentrations for benzene and naphthalene on which biosparging could be discontinued. The Navy should also estimate the number of years needed for benzene and naphthalene to attenuate from the target concentrations to the cleanup goals.

In addition, DTSC will review the remedial design to ensure that DTSC's October 13, 2004 letter (e.g., Alameda Point comments 9 and 14, etc.) and the February 9, 2005 letter (e.g., specific comment 12, etc.) are being addressed.

5. Risk Assessment Methods: In the comment letter dated October 13, 2004, DTSC requested that all detected analytes be carried forward into the risk assessment regardless of their detection frequency. In the comment letter dated February 9, 2005, DTSC stated that the Navy sought to eliminate chemicals occurring with frequency less than five percents, citing U.S. EPA's 1989 Risk Assessment Guidance for Superfund, or chemicals with no toxicity information readily available. DTSC does not accept this guidance outright; rather, DTSC requires that the U.S. EPA guidance be applied judiciously.

Upon examination of the Groundwater RI/FS Table E.2-1, DTSC agreed, as stated in the February 9, 2005 letter, with the exclusion of all the substances with low frequency of detection. Chemicals occurring at very low frequency of detection and with the highest detected concentrations orders of magnitude below their U.S. EPA Region 9 Preliminary Remediation Goals may be excluded from further risk evaluation. Among those substances with no toxicity criteria available, isopropyl toluene was detected 71 times in 279 samples. DTSC believes isopropyl toluene should be included in the risk assessment and the Navy may use xylenes' toxicity information as a surrogate.

The Navy has indicated that revising the risk assessment would not change the preferred remedial alternative. Although this is true, DTSC concludes that the risk assessment deficiencies as specified in DTSC's February 9, 2005 letter remain unresolved. DTSC expects the Navy to prepare future risk assessments to DTSC's satisfaction.

6. Naphthalene: The Office of Environmental Health Hazard Assessment of Cal/EPA published its final ruling on August 3, 2004 that naphthalene is carcinogenic via the inhalation route of exposure. The unit risk factor is established at 3.4 E-05 $(\mu g/m3)^{-1}$, which is nearly equal to that of benzene, 2.9 E-05 $(\mu g/m3)^{-1}$. Benzene was treated as a carcinogen in this risk assessment, but naphthalene was not. DTSC has indicated that concentrations of naphthalene about ten times those of benzene lead to roughly equal cancer risks in the indoor air pathway. Because concentrations of naphthalene at this site are approximately ten times those of benzene at several locations, DTSC estimates that cancer risks due to naphthalene in indoor air are approximately equal to those presented by benzene. In all future risk assessments, the Navy must evaluate naphthalene as a carcinogen at this site and at other sites in California.

   The preferred remedy, Alternative 4, includes institutional controls to ensure that groundwater is not used as a potable water supply during remedy implementation. The Navy would request termination of such institutional controls after the proposed cleanup goals (i.e., 1 µg/L for benzene and 100 µg/L for naphthalene) have been reached. Both DTSC and the California Regional Water Quality Control Board have requested the Navy to change the naphthalene cleanup goal from 100 µg/L to 17 µg/L. The California Department of Health Services' Drinking Water Notification Level for naphthalene is 17 µg/L. This notification level could become the California Maximum Contaminant Level by the time the Navy is contemplating removing the groundwater use restriction. DTSC will not be able to remove groundwater use restrictions until the naphthalene concentration is being treated to or below 17 µg/L, or whatever regulatory level at the time. DTSC reminds the Navy that a determination of groundwater beneficial use for an aquifer is not a remedy for contaminated groundwater.

7. Clarification and Editorial Comments: The Navy states that editorial comments or minor clarifications to the text that would not provide additional substantive information that would alter the conclusions of the risk assessment or remedial alternatives. DTSC believes otherwise.

The Navy fails to describe the areas in which the contaminated plume covers. Since the first comment letter in February 2004, DTSC has repeatedly requested the Navy to define the FISCA contaminated plume to include FISCA IR-01 and IR-02, FISCA BRAC Parcels 22, 23, 27, 28, and 30, and the College of Alameda. The Navy ignores DTSC's request and continues to identify the FISCA contaminated plume as being located at IR-02. Although this deficiency would not alter the Groundwater RI/FS conclusion, such erroneous groundwater identification misleads readers to think that the IR-02 groundwater is the only impacted groundwater at FISCA. In the Proposed Plan, DTSC requires the Navy to accurately define the benzene/naphthalene contaminated plume.

## B. SOIL FS Report, ALAMEDA POINT, OPERABLE UNIT 5

DTSC provided comments on the draft revised Soil FS Report on December 21, 2004 and later the draft final Soil FS Report on February 9, 2005. In the comments DTSC expressed concerns on the extent of excavation, both laterally and vertically, the polynuclear aromatic hydrocarbon (PAH) cleanup level, and a number of other issues. On March 11, 2005 the Navy finalized the Soil FS Report without responding to DTSC's concerns. On May 27, 2005 the Navy issued the draft Proposed Plan and later, on June 7, 2005 the response to DTSC comments on the Soil FS Report. The following constitutes DTSC's response to the Navy's Response to Comment (RTC) as outlined in the June 7, 2005 letter.

1. Contamination at Soil Deeper than Two Feet: DTSC remains concerned that the soil at depths greater than two feet poses significant health risk and institutional controls may not be effective. DTSC believes a four-foot separation between the contaminated soil and the occupants is necessary should the land use remain residential. DTSC further believes that:

   - The four-foot separation should be applicable to the soil at open areas (i.e., undeveloped area) as well as the soil beneath buildings and hardscape (i.e., developed areas).

   - Given the imminent nature of the site redevelopment plan, it is conceivable that the four-foot separation may be achieved in two phases. In Phase I, the Navy may proceed with two feet limited excavation as proposed provided that the current housing management structure remains unchanged. The four-foot separation can then be achieved at Phase II when site redevelopment or major soil disturbance occurs.

- The four-foot separation may be achieved by a variety of means (e.g., bringing in fill materials) and not necessarily by excavation.

2. PAH Cleanup Levels: As explained in DTSC November 20, 2003 comment letter concerning the Draft Soil Feasibility Study Report for Operable Unit 5, DTSC agrees to the use of PAH screening level {i.e., an arithmetic average of 0.62 mg/kg, with a maximum residual concentration of 1 mg/kg of benzo(a)pyrene equivalent [B(a)PE]} as the target cleanup level in the absence of a site-specific risk assessment that is approved or concurred by DTSC. Soils with average PAH concentrations equal to or below 0.62 mg/kg of B(a)PE may require no further action. Those with PAH concentrations greater than 1 mg/kg of B(a)PE are considered hot spots and cleanup will be necessary unless determined to be outliers. This position is consistent with the meeting held on May 31, 2001 and reaffirmed in a recent DTSC comment letter dated July 6, 2005 concerning the FISCA's Action Level Decision Document.

   For Operable Unit 5, where a site-specific risk assessment has been performed, a risk-based PAH cleanup level may be used in lieu of the screening level. However, to establish a site-specific risk-based cleanup level, the target risk (e.g., 1E-06, 1E-05, 1E-04) and/or target hazard will have to be selected and agreed first. DTSC understands that no such targets have been agreed to date.

   It appears that the Navy considers no remediation necessary as long as the risks are estimated to be within the risk management range (i.e., 1E-06 to 1E-04, see page 6, last sentence and page 7, second paragraph, of the Navy's June 7, 2005 RTC letter). DTSC, however, has always considered 1E-06 as the point of departure for any risk management decision. DTSC believes substantial justification and/or mitigating measures will have to be provided if a value within the risk management range is to be chosen as the target risk that is health protective.

3. Background Data: DTSC appreciates the Navy's effort and looks forward to receiving the study and evaluation of Alameda Point background data sets and ranges.

4. DTSC's Decision on the Soil FS Report: DTSC does not consider the Navy's June 7, 2005 RTC satisfactory. However, in the interest of moving the process forward, DTSC agrees that the Navy may advance Operable Unit 5 soil to the Proposed Plan/Record of Decision stage, provided that the Navy resolves the PAH cleanup level and final depth of separation to DTSC's satisfaction before signing of the Record of Decision.

Should you have any question, please contact the undersigned at (510) 540-3770 or (510) 540-3767.

Sincerely,

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